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CIDRA CORPORATION
50 BARNES PARK NORTH
WALINGFORD, CT 06492

EXAMINER	
AMARI, ALESSANDRO V	
ART UNIT	**PAPER NUMBER**
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/648,525	Applicant(s) DAVIS ET AL.	
	Examiner Alessandro Amari	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 January 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-37,39,40,42-47,49-54,56,58-68 and 70-72 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 22-31,39,40,42 and 70 is/are allowed.

6)☒ Claim(s) 1-21,32-37,43-47,49-54,56,58-68,71 and 72 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 22 January 2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6, 8, 9, 11, 12, 15, 32-34, 36, 43-45, 47, 58-62, 64, 66-68, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li US Patent 5,841,918 in view of Feced et al US Patent 6,445,852.

In regard to claims 1, 32, 58, 71 and 72, Li teaches (see Figures 1 and 2a-2c) a tunable optical filter or a method for selectively filtering an optical wavelength band from an input light comprising: providing a first optical element or first optical waveguide

including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function as described in column 3, lines 45-54 and as shown in Figure 2a; and providing a second optical element or second optical waveguide, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function; and the first wavelength band and the second wavelength band overlap spectrally as described in column 4, lines 1-18 and as shown in Figures 2a-2c.

However, in regard to claims 1 and 32, Li does not teach that at least one of the first reflective filter function and the second reflective filter function is not substantially flat over a substantial portion of the respective first or second reflective filter function or in regard to claim 58, that the first and second reflection wavelength are substantially the same or in regard to claim 71 that at least one of the first and second reflective filter function is not substantially constant over a substantial portion of the first and second reflective filter function or in regard to claim 72, that at least one of the first and second reflective filter function is not substantially rectangular or square in shape over a substantial portion of the first and second reflective filter function.

In regard to claims 1, 32, 58, 71 and 72, Feced et al teaches that at least one of the first reflective filter function and the second reflective filter function is not substantially flat over a substantial portion of the respective first or second reflective

filter function or are substantially the same or that at least one of the first and second reflective filter function is not substantially constant over a substantial portion of the first and second reflective filter function or that at least one of the first and second reflective filter function is not substantially rectangular or square in shape over a substantial portion of the first and second reflective filter function as described in column 11, lines 63-67 and column 12, lines 1-18.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-continuous or non-monotonic filter function as taught by Feced et al for the filter of Li in order to provide for filter characteristics that are well-matched to ideal filter responses for a wide variety of applications.

Regarding claims 2 and 59, Li discloses that one of the first and second optical elements or optical waveguides is tunable to change the corresponding first or second reflection wavelength and maintain substantial alignment of the first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18 and as shown in Figures 2a-2c.

Regarding claims 3 and 60, Li discloses that both of the first and second optical elements or optical waveguides is tunable to change each of the first and second reflection wavelengths and maintain substantial alignment of the first and second wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18 and as shown in Figures 2a-2c.

Regarding claims 4 and 61, Li discloses (see Figure 1) an optical directing device (12) optically connected to the first and second optical elements or optical waveguides;

the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 5, Li discloses that the optical directing device comprises at least one circulator as described in column 3, line 16.

Regarding claim 6, Li discloses (see Figure 6) that the circulator receives the light at a first port of the circulator, directs the light to the first reflective element through a second port of the circulator, receives the first wavelength band at the second port, directs the first wavelength band to the second reflective element through a third port of the circulator, receives the second wavelength band at the third port, and directs the second wavelength band to a fourth port of the circulator as described in column5, lines 40-61.

Regarding claim 8, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 4, lines 1-18.

Regarding claims 9, 44 and 62, Li discloses that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figure 2a, 2b.

Regarding claim 11 and 36, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength or wherein tuning

one of the first and second reflective elements comprises offsetting a first reflection wavelength and a second reflection wavelength by a predetermined spacing as shown in Figures 2a-2c and as described in column 4, lines 1-13.

Regarding claims 12 and 45, Li discloses that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal section of the inner core as described in column 3, lines 16-18. Although the prior art does not specifically disclose the claimed outer cladding, inner core with the grating disposed in a longitudinal section of the inner core, this feature is seen to be an inherent teaching of that device since the waveguide or fiber Bragg grating is disclosed and it is apparent that the grating must have a core and cladding and gratings are written in a longitudinal section of cores.

Regarding claims 15, 47 and 66, Li discloses that at least one of the first and second optical elements or optical waveguides is an optical fiber as described in column 3, lines 16-18.

Regarding claim 33, Li discloses that tuning one of the first and second reflective elements includes compressing the one of the first and second optical elements as described in column 3, lines 19-24.

Regarding claim 34, Li discloses that tuning one of the first and second reflective elements comprises substantially aligning a first reflection wavelength and the second reflection wavelength as described in column 4, lines 1-18.

Regarding claim 43, Li discloses tuning the other one of the first and second reflective elements to overlap spectrally the first wavelength band and the second wavelength band as shown in Figure 2c.

Regarding claim 64, Li teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18.

Regarding claim 67, Li discloses a compression device that axially compresses at least one of the first and second tunable optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second optical waveguides as described in column 3, lines 19-40.

Regarding claim 68, Li discloses that the shape of the first reflective filter function is different than the shape of the second reflective filter function as described in column 3, lines 45-67 and as shown in Figures 2a and 2b.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Kringlebotn et al. U.S. Patent 6,097,487.

Regarding claim 7, Li in view of Feced et al teaches the invention as set forth above but does not teach that said optical directing device comprises an optical coupler. Kringlebotn et al. teaches the optical directing device comprises an optical coupler (4) as shown in Figure 5 and as described in column 5, lines 52-67 and column 6, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize couplers as taught by Kringlebotn et al. in the optical filter of Li in view of Feced et al in order to optically direct the signals in the filter device.

5. Claims 10, 35 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claims 10, 35, and 63, Li in view of Feced et al teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized. Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li in view of Feced et al as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

6. Claims 13, 14, 16-19, 37, 46, 49, 50, 51, 53, 54, 56 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Fernald et al. U.S. Patent 6,229,827.

Regarding claims 13, 14, 16-19, 37, 46, 49, 50, 51, 53, 54, 56 and 65, Li in view of Feced et al teaches the invention as set forth above and regarding claim 49, Li teaches that both of the first and second optical waveguides is tunable to change each

of the respective first and second reflection wavelengths as described in column 3, lines 19-24.

Regarding claim 50, Li teaches that the first and second reflection wavelengths are substantially aligned as described in column 4, lines 1-18.

Regarding claim 51, Li teaches that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figures 2a-2c.

Regarding claim 53, Li teaches that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength as shown in Figures 2a and 2b.

Regarding claim 54, Li teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18.

However, regarding claim 13, Li does not teach that at least one of the first and second optical elements comprises an optical fiber, having a reflective element written therein; and a tube, having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber or regarding claims 14, 46 and 65, that at least one of the first and second optical elements or waveguides has an outer transverse dimension of at least 0.3 mm or regarding claim 16, a compressing device that axially compresses at least one of the first and second optical elements wherein at least one of the first and second reflective elements is disposed along an axial direction of each respective first and second optical elements or in regard to claim 17, that first and second compressing devices for

compressing axially the first and second optical elements or in regard to claim 18 that a straining device for tensioning axially the first optical element to tune the first reflective element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed or regarding claim 19, a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band. Nor regarding claim 37 does Li teach wherein the at least one of the first and second optical waveguides has outer dimensions along perpendicular axial and transverse directions, a first portion of the at least one of the first and second optical waveguides having an outer dimension being at least 0.3 mm along said transverse direction, at least a portion of the first portion having a transverse cross-section which is continuous and comprises a substantially homogeneous material; and the at least one of the first and second optical waveguides being axially strain compressed so as to change the at least one of the first and second reflection wavelengths. Regarding claim 56, Li does not teach that the optical filter further includes a compression device that axially compresses at least one of the first and second optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second tunable elements.

Regarding claim 13, Fernald et al. teaches that (see Figure 1) at least one of the first and second optical elements comprises: an optical fiber (10), having a reflective element (12) written therein; and a tube (20), having the optical fiber and the reflective

element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber as described in column 4, lines 23-25.

Regarding claims 14, 46 and 65, Fernald et al. also teaches that at least one of the first and second optical elements or waveguides has an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claims 16 and 56, Fernald et al. also discloses a compressing device for compressing simultaneously and axially the first and second tunable optical elements or the tunable optical waveguide, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element as described in column 1, lines 57-67 and column 2, lines 1-3 and lines 42-44.

Regarding claim 17, Fernald et al teaches first and second compressing devices for compressing axially the first and second optical elements respectively as described in column 1, lines 57-67 and column 2, lines 1-4.

Regarding claim 18, Fernald et al. teaches a straining device for tensioning axially the first optical element to tune the first reflective element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed in column 2, lines 1-3.

Regarding claim 19, Fernald et al teaches a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band as described in column 1, lines 41-49.

In regard to claim 37, Fernald et al. teaches that the at least one of the first and second optical waveguides has outer dimensions along perpendicular axial and transverse directions, a first portion of the at least one of the first and second optical waveguides having an outer dimension being at least 0.3 mm along said transverse direction as described in column 1, lines 60-61, at least a portion of the first portion having a transverse cross-section which is continuous and comprises a substantially homogeneous material as described in column 1, lines 65-67; and the at least one of the first and second optical waveguides being axially strain compressed so as to change the at least one of the first and second reflection wavelengths as described in column 2, lines 1-3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the compression tuned grating as taught by Fernald et al. in the optical system of Li in view of Feced et al in order to provide for precise tuning of the filter.

7. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Putnam et al. U.S. Patent 6,310,990.

Regarding claims 20 and 21, Li in view of Feced et al teaches the invention as set forth above but does not further teach a first compressing device for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element; and a displacement sensor, responsive to the

compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element or wherein the displacement sensor includes a capacitance sensor coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element.

Regarding claims 20 and 21, Putnam et al. does teach (see Figure 2) a first compressing device (50) for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element as shown in Figure 1; and a displacement sensor (24), responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element as described in column 5, lines 51-67 and column 6, lines 1-6 or wherein the displacement sensor includes a capacitance sensor (72, 74) coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element as described in column 6, lines 1-6.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical structure as taught by Putnam et al. in the optical filter system of Li in view of Feced et al in order to provide feedback control for the tuning of the optical filter.

8. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 in view of Fernald et al U.S. Patent 6,229,827 further in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claim 52, Li in view of Feced et al and further in view of Fernald et al teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized.

Regarding claims 40 and 52, Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li in view of Feced et al and further in view of Fernald et al as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

Allowable Subject Matter

9. Claims 22-31, 39, 40, 42 and 70 are allowed.

10. Claim 22 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the second inner core being optically connected to the first inner core" as set forth in the claimed combination. Claims 23-31, 39, 40, 42 and 70 are also allowable based upon their dependence on claim 22.

The prior art of record, Li in view of Fernald et al teaches a tunable optical filter comprising a tunable optical waveguide comprising a first inner core having a first reflective element disposed therein and a second inner core having a second reflective element disposed therein. However, the prior art of record, does not teach the second inner core being optically connected to the first inner core and there is no motivation or teaching to modify this difference as derived.

Response to Arguments

11. Applicant's arguments filed on 22 January 2007 have been fully considered but they are not persuasive.

The Applicant argues in response to the Argument in the Answer on page 15, line 12 through page 17, line 2 that one skilled in the art would appreciate that a filter response for functions and objects of the invention described in Li would be rectangular in shape and have a substantially flat response and further that one skilled in the art will recognize that the slope of the sides of the filter response would be steep and therefore Li's filter response shown in Figure 2a is not "ramped" or "Gaussian". The Applicant in the arguments and in the attached affidavit posits further reasons why the filter function in Li is not "ramped" or "Gaussian" including:

a) that a person or ordinary skill in the art would appreciate that the filter response shown in Figure 2a is not drawn to scale;

b) that a person or ordinary skill in the art would appreciate that the filter response in Li is a substantially rectangular waveform, which results in a band-pass filter

c) that a person or ordinary skill in the art would appreciate that a substantially rectangular waveform shown in Figure 2a reflects certain range of frequencies of a wavelength division multiplexed (WDM) signal and does not reflect unwanted frequencies outside the range of the WDM signal.

d) that a person or ordinary skill in the art would appreciate that any ramped waveform would undesirable reflect unwanted frequencies other than the certain range of frequency in the WDM signal, which would adversely affect the overall operability, and performance of the system of Li

e) that a person or ordinary skill in the art would appreciate that the substantially rectangular waveform of the filter response shown in Figure 2a would need to be as substantially rectangular as possible so as to only reflect the certain range of frequencies of the signals of interest and would clearly not have any such substantially ramped waveform component like that shown in Figure 2a of Li.

In response to this argument, the Examiner would like to point out that the Applicant did not address the contention of the Examiner that conventional filter responses tend to have a "ramped" or Gaussian" shape which approximates a "flat" response". Furthermore, the Applicant did not address the Examiner's contention that the filter response of Li is not substantially flat "over a substantial portion of the filter

function" as recited in claim 1 (see lines 14-15) since the Applicant has not defined the term "substantial portion" in any terms of degree in the specification or drawings. The Applicant only offers assertions and unsubstantiated opinion as to the filter response as shown in Figure 2a of Li. Examiner also questions the assertion in the arguments (and in the affidavit) that "one skilled in the art would understand that the slope of the sides of the filter response would be steep and therefore, Li's simplified filter response shown in Figure 2a is not in fact ramped or Gaussian", Examiner would like to point out that the Applicant has not defined what a "steep" filter response would be and what it would look like. Nevertheless, the Applicant is reminded that the 35 U.S.C. 103 rejection put forward acknowledged that Li did not teach that the filter functions are not substantially flat over a substantial portion of the respective first or second reflective filter function and that this teaching was provide by Feced et al. The arguments presented in c), d) and e), contend that any ramped waveform (i.e., not substantially rectangular) would undesirable reflect unwanted frequencies other than the frequency of interest. However, Applicant should note that there is nothing in Feced et al that would invalidate or render Li unsatisfactory for its intended purpose since Feced et al indicates that the filter can be used in WDM applications as described in column 10, lines 59-65. Further, Feced et al indicates that the filter response of each passband can be optimized by using the invention of Feced et al compared to that in the prior art, contradicting the Applicant's assertion that the use of a "ramped" filter response would be undesirable in a WDM system.

The Applicant further argues in response to the argument in the Answer on page 17, line 3 through page 18, line 8 that nothing in Feced et al suggest a reason to modify the teaching of Li as a whole to produce an optical output signal that is not substantially flat over a substantial portion thereof. The Applicant further submits that even if there are known examples of applications where the filter response may need to be non-continuous and non-monotonic (including wavelength division multiplexers) there is nothing in Feced et al that suggests a reason to modify the teaching of Li as a whole to produce an optical output signal that is not substantially flat over a substantial portion thereof. Therefore, neither Li nor Feced et al suggest a need "to provide for filter characteristics tat are well-matched to ideal filter response for a wide variety of applications" as stated in the motivation.

In response to this argument, the Examiner would like to point out that Li is used in WDM systems (see for example the abstract) and that Feced et al is also utilized in WDM applications (see column 10, lines 59-65). The filters in Feced et al provide for a filter response for passbands (such as those shown in Figure 2a in Li) that can be optimized compared to those in the prior art (such as Li) as further described in column 11, lines 63-67 and column 12, lines 1-18 in order that the filter characteristics be well-matched to ideal filter responses.

The Applicant further argues in response to the argument in the Answer on page 18, line 9 through page 19, line 2 that the Examiner's Answer is incorrect when it states that the advantage of the claimed filter namely, that it has a desired effective filter

function that is difficult or substantially impossible to produce by a single grating since it was clearly stated in the original specification on page 9, lines 23-25.

In regard to this argument, the Examiner acknowledges that the Answer was incorrect and that the advantage was clearly stated in the specification.

The Applicant further argues in response to the argument in the Answer on page 19, line 3 through page 20, line 8 that one of ordinary skill in the art would not be motivated to combine the cited prior art in the manner proposed based on what can be reasoned from knowledge that is known to one of ordinary skill in the art established by scientific principles or legal precedents established by prior case law and cites various passages on pages 13-17 in the Appeal Brief to support his position.

In response to this argument, the Examiner would again like to point out that Li is used in WDM systems (see for example the abstract) and that Feced et al is also utilized in WDM applications (see column 10, lines 59-65). To one of ordinary skill in the art there is every reason to believe in accordance with scientific principles that one would modify the filter of Li in order to provide for a filter response for passbands (such as those in WDM applications) that can be optimized compared to those in the prior art (such as Li) as further described in column 11, lines 63-67 and column 12, lines 1-18 of Feced et al.

The Applicant further argues in response to the argument in the Answer on page 20, line 9 through page 21, line 2 that the Applicant is not attacking the references

individually but instead is looking at the teaching of the cited prior art combination as a whole consistent with *In re Keller*, 208 USPQ 871 (CCPA 1981) The argument, in summary is that Li's device provides a device for modifying wavelength/bandwidth of the spectrum and that the device takes the form of multiple optical elements each having substantially flat filter functions and that there is no hint or suggestion in Li to use an optical element that is not substantially flat and thus it is respectfully submitted that one of ordinary skill in the art would not be motivated to look at that disclosed by Feced et al to make a substitution or modification in a multiple element device like Li's optical system.

In response to this argument, The Examiner respectfully submits that in determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious. (see MPEP 2142.02) The Examiner would like to point out the secondary reference, Feced et al provides the motivation to utilize a non-flat filter function in WDM applications as taught by Feced et al into the WDM system of Li (see column 10, lines 59-65 of Feced et al), that is, to provide for a filter response for passbands (such as those in Li) that can be optimized compared to those in the prior art as further described in column 11, lines 63-67 and column 12, lines 1-18 in order that the filter characteristics be well-matched to ideal filter responses. Furthermore, Feced et al is analogous art since it is in the same field of endeavor (i.e., fiber gratings in WDM applications). As such, the Examiner has met the criteria in establishing a *prima facie* case of obviousness that there must be

some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the teachings. This criterion is met since the motivation to combine is provided in Feced et al in column 11, lines 63-67 and column 12, lines 1-18.

Continuing the argument in the Answer on page 20, line 9 through page 21, line 2, the Applicant further contends that Feced et al is directed towards the design and implementation of an optical device or system having a single optical element with a single optical function. Furthermore, nothing in Feced et al remotely suggests providing an optical filter having multiple optical elements with functions that are not substantially flat and this there is no motivation to make such a substitution to a multiple optical element device like Li's system.

In response to this argument, Li, the primary reference, provides a teaching of first and second optical elements each having reflective filter functions. The secondary reference, Feced et al teaches that an optical filter or fiber Bragg grating can have a non-flat response. There is nothing in Feced et al to suggest that only one fiber grating can be used in application or systems. In fact, Feced et al specifically mentions use in WDM systems, which are known in the art to contain multiple optical elements.

The Applicant further argues in response to the argument in the Answer on page 21, lines 3-7 that dependent claims 2-6, 8-9, 11-12, 15, 32-34 and 36 are patentable for the reasons cited above and points to the Applicant's argument on page 16 of the Appeal brief which says the same.

In response to this argument, the Examiner refers the Applicant to the responses to the arguments above.

The Applicant further argues in response to the argument in the Answer on page 21, line 8 through page 22, line 6 in regard to definition of the term "substantially" that one skilled in the art after reading the specification and the drawings would appreciate what the term "substantially" means in relation to the subject matter in claim 58. Furthermore, the Applicant argues that Li does not use first and second reflection wavelengths that are substantially the same while nothing in Feced et al suggests using two reflection wavelengths that are substantially the same. Furthermore, the Applicant argues that if Li's first and second reflection wavelengths were substantially the same, then there would be no tuning of the bandwidth, which is the sole purpose of the design of *Li*'s optical system. Therefore, the Appellant maintains that *Li* effectively teaches away from the optical filter recited in claim 58.

In response to this argument, the Examiner reaffirms his position that the term "substantially" is not defined in the specification. The applicant cites Figures 3A, 3B and 6 in his Appeal Brief as showing support for this limitation. However, a description accompanying these figures indicates that the resulting reflective filter function can be substantially aligned or the same as the reflection wavelength but there is no quantitative measure associated with the term "substantially" (see page 9 of specification, lines 1-18). Given the broadest reasonable interpretation accompanying

the term "substantially", Li is read as teaching that the first reflection wavelength (Figure 2a) and the second reflection wavelength (Figure 2b) are substantially the same as shown in Figure 2c.

The Applicant further cites in response to the argument in the Answer on page 22, line 7 through page 23, line 2, the same arguments made in support of the patentability of claim 58.

In response, the Examiner cites his reply as stated in the Examiner's Answer on pages 21 line 8 through page 22 , line 6.

The Applicant further cites in response to the argument in the Answer on page 23, lines 3-8 the same arguments made in support of the patentability of claims 71-72 and the remaining dependent claims.

In response, the Examiner cites his reply as stated in the Examiner's Answer on page 23, lines 7-8.

Affidavit/Declaration

12. The declaration under 37 CFR 1.132 filed 22 January 2007 is insufficient to overcome the rejection of claims 1-6, 8, 9, 11, 12, 15, 32-34, 36, 43-45, 47, 58-62, 64, 66-68, 71 and 72 based upon Li in view of Feced et al as set forth in the last Office action because: the declaration fails to set forth any objective evidence or facts regarding the typical filter response of Li. There is no evidence of criticality or

unexpected results, commercial success, long felt but unsolved needs, failure of others, or skepticism of experts. The Applicant contends that a typical filter response such as Li does not tend to have a "ramped" or "Gaussian" shape. The Applicant only offers assertions and unsubstantiated opinion as to the filter response as shown in Figure 2a of Li. Examiner also questions the assertion in the affidavit that "one skilled in the art would understand that the slope of the sides of the filter response would be steep and therefore, Li's simplified filter response shown in Figure 2a is not in fact ramped or Gaussian", Examiner would like to point out that the Applicant has not defined what a "steep" filter response would be and what it would look like. In summary, the declaration states only conclusions about the ramped waveform component when it comes to Li, which has little weight when considered in light of all the evidence of record in the application.

Conclusion

13. This is a RCE of applicant's Application No. 09/648,525. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro Amari whose telephone number is (571)272-2306. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ava

01 March 2007

Alessandro Amari

ALESSANDRO AMARI
PRIMARY PATENT EXAMINER